National Climatic Data Center

DATA DOCUMENTATION

FOR

DATASET 9725 (DSI-9725)

Hourly Solar Radiation

January 22, 2004

National Climatic Data Center
151 Patton Ave.
Asheville, NC 28801-5001 USA

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1. Abstract: The Hourly Solar Radiation dataset is a historical dataset maintained by the National Climatic Data Center (NCDC). Elements included are total solar radiation measured in Langley's per hour, solar elevation, extraterrestrial radiation and various surface observations ranging from temperature and dew point to type of precipitation, snow cover and cloud layer parameters.

This dataset covers approximately 50 stations in the United States and in the Pacific area. A few stations have records beginning in December 1951. The remaining stations begin observations in July 1952. Hourly surface observations were recorded in Local Standard Time. Prior to June 1 1957, the surface observations were taken 20-30 minutes past the hour. From June 1 1957 through December 31 1964, the surface observations were taken a few minutes before the hour. From July 1 1958 to the end of this observation period the solar data are for the hour ending on the hour punched. This change made the hourly data compatible with the times of the surface observation on Form WBAN 10.

2. Element Names and Definitions:

Format

Column	Element	Card Code	Definition
1-5	Station Number	00001-99999	WBAN Number
6-7	Year	51-99	Last two digits of year
8-9	Month	01-12	January - December
10-11	Day	01-31	Day of month
12-13	Hour LST	00-23	Solar hour is one hour later than LST
14-17	Radiation Langley's per hour	0000-9999	0.0 - 999.9 Langley's to tenths
18-19	Solar Elevation	01-90	1-90 whole degrees
20-22	Extra-terrestrial radiation	001-999	1 - 999 whole Langley's per hour
23-24	Sunshine	00-60	0 - 60 minutes
25	Snow cover	0 or blank 1	None or trace of snow One inch or more
33	Snow cover	0 or blank 1	None or trace of snow One inch or more Note: This column was used for snow cover from the beginning of the program until Oct. 1 1959, when it was changed to Column 25. Column 33 was left blank beginning Oct. 1 1959.
34-35	Solar week	01-52	Solar week of year
36	Opaque sky cover	0 1-9	Less than 1 tenth 1 - 9 tenths

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		X	10 tenths
37	None	Blank	
38-39	Solar hour	00-23	Solar hour-True solar time
40-41	Percent of possible radiation	00-99 X/col.40	0 - 90% 100% or greater
42-44	Visibility		Statute Miles Increments
		000-006	0 - 3/8 mile 1/16 mile
		006-020	3/8 - 2 miles 1/8 mile
		020-027	2 - 2 ½ miles 1/4 mile
		027-030	2 ½ - 3 miles 1/2 mile
		030-150	3 - 15 miles 1 mile
		150-950	15 - 95 miles 5 miles
		990	100 miles or more
45	Liquid precipitation	0	None
		1	Light rain
		2	Moderate rain
		3	Heavy rain
		4	Light rain showers
		5	Mod. Rain showers
		6	Heavy rain showers
		7	Light freezing rain
		8	Mod. freezing rain
		9	Heavy freezing rain
46	Liquid precipitation	0	None
		4	Light drizzle
		5	Mod. drizzle
		6	Heavy drizzle
		7	Light freezing drizzle
		8	Mod. freezing drizzle
		9	Heavy freezing drizzle
47	Frozen precipitation	0	None
		1	Light snow
		2	Mod. snow
		3	Heavy snow
		4	Light snow pellets
		5	Mod. snow pellets
		6	Heavy snow pellets
		7	Light ice crystals
		8	Mod. ice crystals
		9	Heavy ice crystals
48	Frozen precipitation	0	None
		1	Light snow showers
		2	Mod. snow showers
		3	Heavy snow showers
		7	Light snow grains
		8	Mod. snow grains
		9	Heavy snow grains
49	Frozen precipitation	0	None
		1	Light sleet
		2	Mod. sleet
		3	Heavy sleet
		4	Light hail
		5	Hail
		6	Heavy hail
		7	Light soft hail

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		8 9	Small hail Heavy soft hail
50	Obstructions to vision	0 1 2 3 4 5	None Fog Ice fog Ground fog Blowing dust Blowing sand
51	Obstructions to vision	0 1 2 3 4 5 6	None Smoke Haze Smoke and haze Dust Blowing snow Blowing spray
52-54	Dry bulb temperature	000-999 100-199 X01-X99	0°F - 99°F whole degrees 100°F - 199°F -1°F - -99°F
55-57	Dew point temperature	000-099 X01-X99	0°F - 99°F whole degrees -1°F - -99 °F
58-80	Clouds and obscuring phenomena		
58	Total amount	0, 1-9 X	Tenths 10 tenths
59	Amount of lowest layer	0, 1-9 X	Tenths 10 tenths
60	Type of cloud lowest layer	0 1 2 3 4 5 6 7 8 9 X/2 X/4 X/5 X/6 X/7 X/9 X	None Fog Stratus Stratocumulus Cumulus Cumulonimbus Altostratus Altocumulus Cirrus Cirrostratus Stratus Fractus Cumulus Fractus Cumulonimbus Mamma Nimbostratus Altocumulus Castellanus Cirrocumulus Obscuring phenomena other than fog
61-63	Height of lowest layer	000-990 888 XXX	Hundreds of feet 0 - 99,000 feet Unknown height of a cirroform layer Unlimited vertical visibility
64	Amount of second layer	0, 1-9 X	Tenths 10 tenths
65	Type of second layer	0 , 1-9 X/	See column 60
66-68	Height of second layer	000-990 XXX	See columns 61-63
69	Summation amount at second layer	0, 1-9 X	Tenths 10 tenths

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70	Amount of third layer	0, 1-9 X	Tenths 10 tenths
71	Type of third layer	0, 1-9 X/	See column 60
72-74	Height of third layer	000-990 XXX	See columns 61-63
75	Summation amount at third layer	0, 1-9 X	Tenths 10 tenths
76	Amount of fourth layer	0, 1-9 X	Tenths 10 tenths
77	Type of fourth layer	0, 1-9 X	See column 60
78-80	Height of fourth layer	000-990 XXX	See columns 61-63

3. Start Date: 19510101

4. Stop Date: 19761231

5. Coverage:

a. Southernmost Latitude: -2.0S
b. Northernmost Latitude: 72.0N
c. Westernmost Longitude: -165.0W
d. Easternmost Longitude: -60.0E

6. How to Order Data:

Ask NCDC's Climate Services about the cost of obtaining this data set.
Phone: 828-271-4800
FAX: 828-271-4876
E-mail: **NCDC.Orders@noaa.gov**

7. Archiving Data Center:

Archive Branch
National Climatic Data Center
151 Patton Avenue
Asheville, NC 28801

8. Technical Contact:

National Climatic Data Center
151 Patton Avenue
Asheville, NC 28801

9. Known Uncorrected Problems: None.

10. Quality Statement:

11. Essential Companion Datasets:

12. References:

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